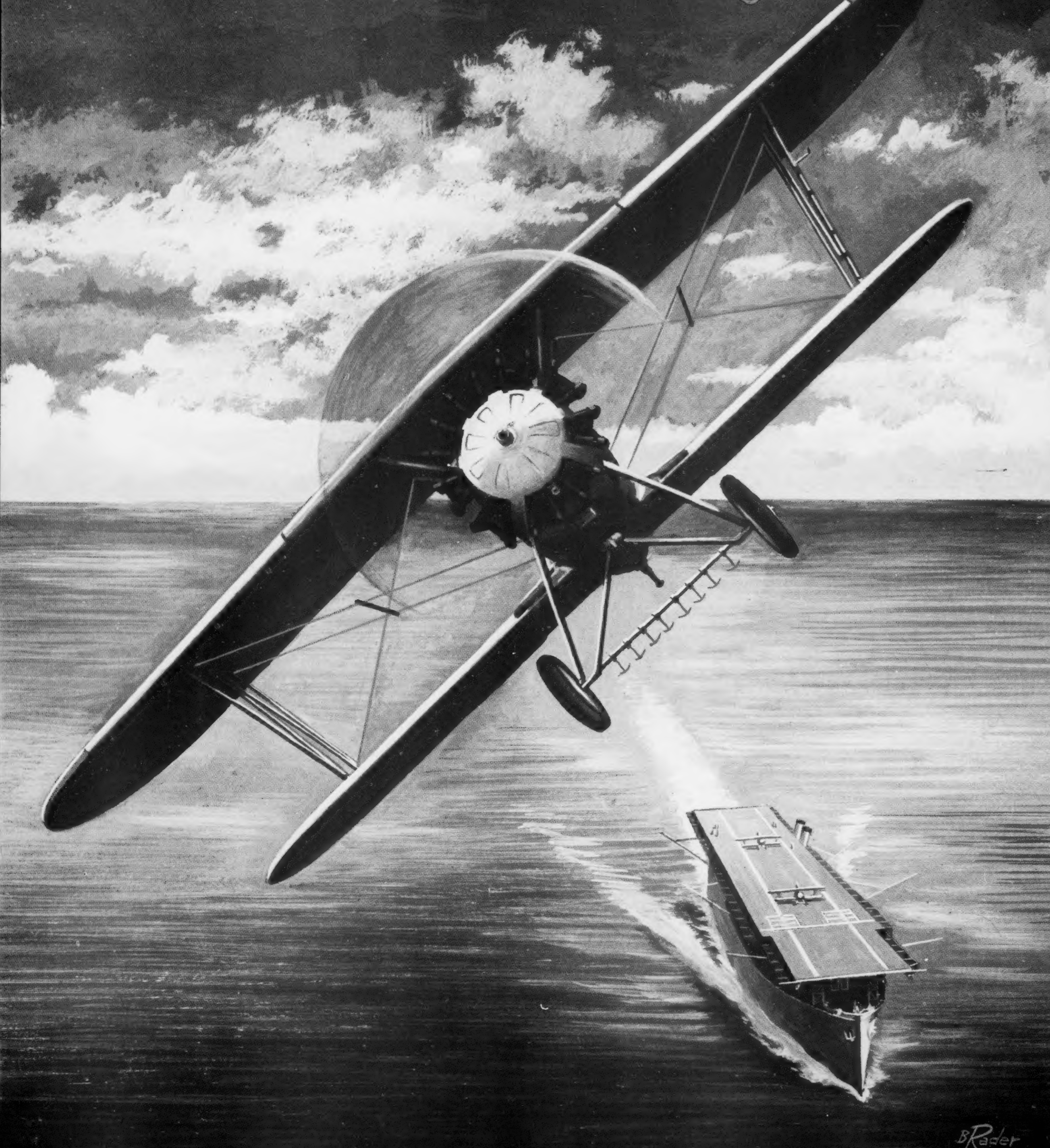
approach

JANUARY 1979 THE NAVAL AVIATION SAFETY REVIEW



The Axial Flow Compressor:

PERFORMANCE

COMPRESSOR stall or "surge" is a phenomenon that has been recognized since the advent of the jet engine, and it is something that jet pilots talk about frequently. How many operators really know and understand the mechanism, its cause and effect? Those who have experienced stalls in flight may have been sufficiently rattled the first time to delve into the subject and learn why it sounded like someone taking a swing at the airplane with a baseball bat, yet received only token attention by the Maintenance Department. Are compressor stalls more prevalent in today's high specific energy engines? Probably so, and for many reasons. With the advancements being made in metallurgy and engine technology, and the increased performance demanded of tactical aircraft, machinery is being constantly pushed closer to the limits of its envelope, which to a compressor means a reduced "stall margin." To understand this term better, a quick discussion on the design and performance of an axial flow compressor is appropriate.

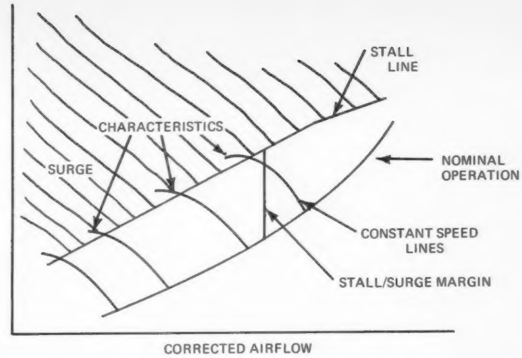


Fig. 1

The functions of the compressor section of a jet engine are: 1) to maintain a mass flow rate of air through the engine, and 2) to add energy to this air in the form of a pressure increase prior to its entrance into the hot section. To accomplish this, the compressor rotor is shaped like a cone, so that the annulus cross section decreases and air is compressed as it is forced aft by the blading. As the air is compressed, its temperature rises also. The work being done by the compressor is approximately equivalent to the compression ratio (ratio of exit to inlet total pressure) it is maintaining and the attendant rise in total temperature. The former is of most interest for our purpose. The compressor must work against a back-pressure caused by the restriction of air through the hot section of the engine, and it is this back-pressure which plays an important part in the compressor's performance. The flow restrictions in the hot section are derived from the exit area of the turbine nozzles, the exhaust exit area, and the pressure caused by burning fuel. The performance of an axial flow compressor, such as used in aircraft turbojet and turbofan engines, is best described by its steady state performance map. Figure 1 illustrates a typical compressor map. The nominal operating line represents operation at various rotor speeds and is the schedule which the fuel control tries to maintain. The stall line defines the maximum pressure ratios which the compressor can achieve throughout its range of rotor speeds. Operation above this line is accompanied by a drastic reduction in pressure ratio. This is called "surge," and it is caused by excessive aerodynamic blade stall. The stall margin, defined as the vertical distance between the nominal (design) operating line and the surge line, can be thought of as a measure of the compressor's ability to accommodate flow transients which instantaneously load the machine. This margin is dictated by overall engine inlet design and is affected by many different phenomena. Unfortunately, the point of maximum efficiency in a compressor is just prior to stall or just below the surge line on the performance map, and therefore, a trade-off between efficiency and surge margin is required. The expected flow transients which the compressor must be able to accommodate will affect design efficiency. Flow transients initiated within the engine system are normally caused by throttle movement. Engine operation with a properly functioning fuel control will closely follow the nominal operating line in Fig. 1. However, in a manual mode of fuel control operation (with some engines), the accel/decel schedule is not automatic, but determined by the rate at which the throttle is moved. Too rapid a movement of the throttle causes a rapid increase in hot section pressure, which in turn demands a high compression ratio from the compressor. The compressor cannot negotiate this instantaneous acceleration demanded of it, and, consequently, blade stall results. This is depicted on

and STALL

Fig. 1 as a near-vertical line into the surge area.

Compressor surge can be initiated also by flow distortion at the compressor inlet. Flow distortion can be in the form of total pressure fluctuations caused by Mach-wave/boundary layer interactions in the duct, aircraft maneuvering, icing, etc., and also by total temperature fluctuations caused by catapult steam ingestions, rocket motor exhaust, runway temperature gradients, etc. Inlet flow distortions such as these effectively lower the surge line in Fig. 1, thereby reducing the stall margin and causing possible surge even during normal deviations from the nominal operating line.

Damaged compressor blading (FOD or corrosion) also lowers the surge line, and since fuel scheduling is no longer matched to the compressor's ability to pump air, operation above the stall line may result.

The most significant phenomenon affecting the performance of an axial flow compressor is stall. If the flow rate through a compressor blade row is decreased while the rotor speed is maintained constant, angles-of-attack on the blades will increase, and eventually flow separation will occur. This condition is called stall and is similar in some respects to the stall of an isolated airfoil; differences are due to the adjacent blading in a cascade of airfoils. Unlike the angle-of-attack of an aircraft wing, angle-of-attack in a blade row or *cascade*, such as found in a compressor or turbine, is the total turning angle of the flow. Stalled operation of a compressor is accompanied by a drastic decrease in efficiency and excessive oscillating blade loads capable of causing structural failure. Stall occurs in the range of unstable compressor operation and, hence, can trigger surge. Usually a compressor stalls in an asymmetric manner; that is, well-defined regions of the annulus are stalled while the remaining area is unstalled (see Fig. 2).

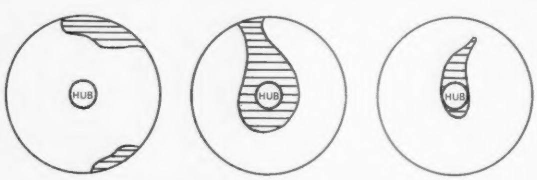


Fig. 2

The flow through these stalled patches is severely restricted in accordance with the decrease in total flow rate through the compressor; thus the flow is diverted around this blockage. Effectively, this increases blade AOA on one side of the restriction while decreasing it on the other side. In Fig. 3, blade No. 1 will soon become unstalled, while

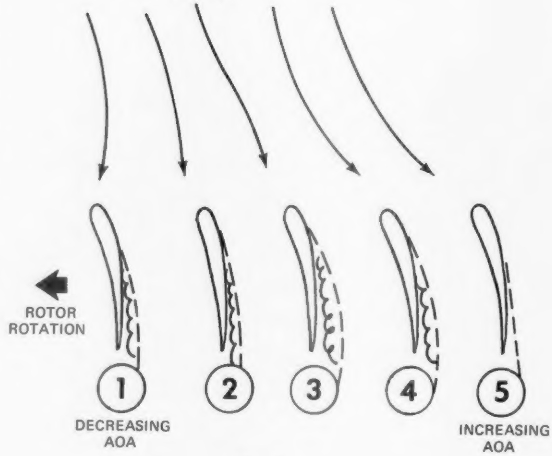


Fig. 3

at blade No. 5, flow separation will commence.

This condition is termed "rotation stall," since it propagates circumferentially in a direction opposite to rotor rotation. In an absolute frame of reference, this speed of circumferential propagation is 30 to 60 percent of the rotor speed. When these conditions become severe enough to cause net flow rate fluctuations with time, the situation is called "surge." In an extreme situation, pressure in the turbine exceeds that of the compressor, and flow reversal (hot stall) occurs. This describes operation in the unsteady area of the compressor performance map.

Typically, a compressor stall will be indicated by engine rumble or vibration, a very pronounced bang, or a series of bangs to which the natural pilot reaction is to reduce power. Normally, this reduction in hot-section pressure and consequent pressure ratio demand is sufficient to clear the stall. If the stall were to continue and grow into an aggravated surge, a definite loss of thrust would be noticed, and structural damage to the engine could result. Blades passing in and out of the low energy areas are subject to very rapid oscillations between high and low loadings, which sets up fatigue stresses.

Another damaging effect of compressor stalls is high turbine temperatures. Typically, for each pound of air that is consumed in the combustion process, approximately 3 pounds pass through unconsumed. This unconsumed air contributes to thrust because of its mass, and is further utilized in cooling certain parts of the hot section of the engine. When a compressor stall occurs, the reduction in

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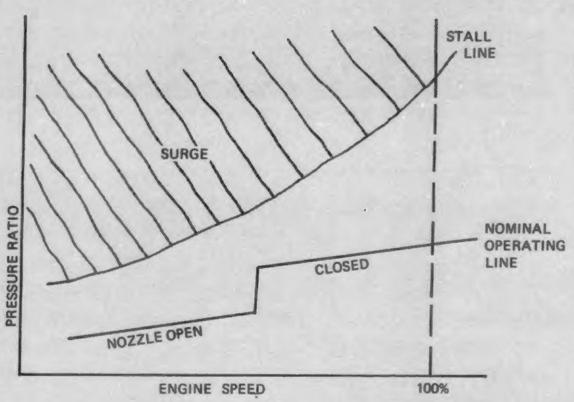


Fig. 4

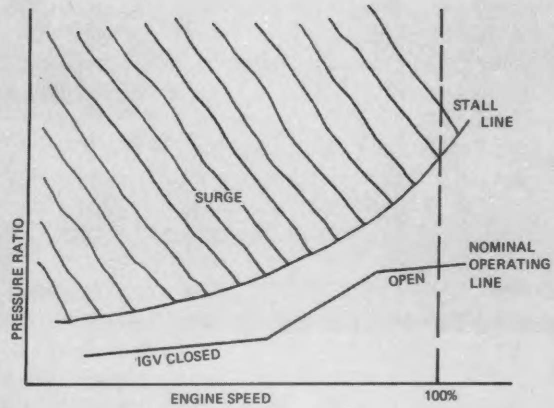


Fig. 5

flow rate is such that plenty of air is available for combustion, but a reduced amount for cooling. Remember, fuel flow hasn't changed at this point, and there still exists a mismatch between fuel schedule and flow rate. So even during a "cold stall," certain engine parts can be subjected to temperatures that will reduce their expected service life.

Many engineering design methods are utilized in today's advanced high specific energy turbomachines that allow the nominal operating line of the compressor to conform more closely to the stall line, and thus provide a more constant stall margin throughout the operating envelope of the engine. In the case of a constant speed engine where all operation would be at 100 percent RPM, a compressor could operate at a much higher compression ratio and retain a sufficient stall margin. However, this is not feasible as the engine must start at zero RPM and build up to 100 percent, and of course there is an unequivocal need for power variations in flight.

Some of the methods or devices which permit higher compression ratios while still retaining sufficient stall margin during the critical low speed operating regime are variable area exhaust nozzles, variable inlet guide vanes, variable stator blades, dual spool compressors, and compressor bleed air ducts. These features serve to vary the engine inlet design in order to accommodate a broader operating envelope just as flaps, slots, and BLC increase the capabilities of a wing.

The common use of these various design features, along with advancements in metallurgy allowing higher compressor and turbine blade loading, have allowed jet engines to meet the broadened performance envelope required of today's tactical aircraft. However, these advances have brought to light the criticality of inlet design and an acute awareness of the effects of inlet flow distortion. Until a few years ago, engine inlet compatibility limits were successfully determined by evaluating an engine's tolerance to steady state distortion. Normally, this was done with screens or similar obstructions placed in the inlet and the compressor face instrumented with low-response pressure probes. The engine was operated under all conditions of interest, and by comparing pressure data at the compressor face with the engine's performance, distortion factors were derived empirically. It was known that unsteady flow was being produced by these test devices, but no attempt was made to evaluate its effect. However, when this technique was applied to the TF-30 turbofan engine during the F-111A flight test program, the data did not correlate well nor was the method found valid for other fan-type engines at that time. It became evident that another significant variable, namely turbulence, was involved. Turbulence can be described as flow with random pressure fluctuations and can be quantified as a fluctuation in Root Mean Squared total pressure. Turbulence, like previously mentioned flow distortion, causes a reduction in the compressor's surge line, and also causes a reduction in flow capacity. Research is continuing in this area in an effort to better predict the performance of a system and its tolerance to turbulent flow distortion.

Back to the real world – from an operator's standpoint – a better physical feel for the stall mechanism itself, what probably caused it, and what effect it may have on your engine is an important part of piloting one of today's high performance jet aircraft. So take care of your engine; it probably won't fail on your flight, but . . . !

A Tad Short. The pilot of an attack aircraft was flying a close-air-support training mission. On the second low-level pass to the target he inadvertently released a bomb, which exploded on impact in the desert, 3 miles short of the assigned target.

After turning on the master arm switch and rolling in, the pilot had tried to check ground speed by pulling the commit trigger to the first detent. He mistakenly continued through to the commit position and the system dropped the bomb.

Luckily the bomb exploded within the restricted area, caused no damage, and didn't injure or kill anyone.

Inflight Problems. A P-3 was on an operational flight cruising at FL210 in solid IMC when it encountered moderate to heavy icing. The flight conditions had caused the plane commander to turn on the engine anti-ice after initial climb to altitude. All engines had been operating normally until No. 3 began to act sick.

The No. 3 engine firewarning light illuminated and the horn activated, accompanied by a 15-degree TIT rise. No other engine fire symptoms were detected. However, the engine was secured with the E-handle, and all firewarning indications ceased.

The plane commander declared an emergency, aborted the mission, and flew toward the nearest suitable landing field. On arrival overhead the divert field, the plane commander refiled to Homeplate. The aircraft was considerably overweight for a landing and there was no safe ordnance jettison area anywhere close. They had to get rid of about 7000 pounds of ordnance.

The aircraft continued to Homeplate where weather was not a factor and where a designated ordnance jettison area existed. By the time the aircraft reached Homeplate and the ordnance was dropped, the weight was OK for landing. The plane commander made an uneventful three-engine landing.

Later, investigation revealed a swedge cable had pulled free from the manual release lever during activation of the jettison cycle. It was also discovered that the manual release lever should have been replaced by an improved version (Aviation Armament Bulletin 489). The improved version had not been incorporated despite stenciling on the associated pylon which said it had. A further check in the squadron revealed several more Aero 65A1 bomb racks did not have AAB 489 incorporated – even though they were stenciled to the contrary.

During rollout, the tower advised the pilot that he had hung ordnance. The pilot couldn't believe it. They had been carrying five dummy mines, had released them in the jettison area, and noted five splashes in the water. However, a mine was hung up and hanging from a wing station.

Oops, Slips. The pilot of a CH-53D was engaged in an external lift mission, along with other aircraft in the squadron. They were hauling a stack of telephone poles from a stockpile at Point A to Point B.

When the signal was given that the load of six poles was ready to be picked up, the pilot added power. After the load became airborne, and the pilot moved off slowly, the clevis pin holding the cable around the poles pulled out and three of the telephone poles fell into the water.

The three telephone poles that remained attached were delivered to the off-load site, and an investigation revealed the clevis pins had been installed improperly on the choker cable. (A gross error on the part of the cargo handlers.)

Several loads had been successfully transported, but the fact that the dropped load wasn't prepared properly is a poor excuse for what could have been a tragedy. Helicopter support

teams must be eternally vigilant in preparing external loads correctly and in hooking them up properly!

Nice Work. The LAMPS SH-2F helicopter performs a variety of missions such as ASW, Anti-Ship Missile Defense, Search and Rescue, and Supply. One of the newest missions is that of "over-the-horizon" targeting, which involves being an independent information-gathering platform for future shipboard weapons employment.

LT Joe Belinski, his copilot, LT Mike Roberts, and AW2 Doug Perry of HSL-34 Det 1 were flying a night, over-the-water targeting mission. They were in night IMC, but the crew had been well-briefed and the exercise was proceeding as planned.

With 30 minutes left in the mission, the HAC decided to close the ship — then approximately 20 miles away. The aircraft was at 500 feet and 80 knots. At 12 miles from the ship, the aircrew felt a loud thump and experienced movement of the controls. Moderate vibrations were also present. A tail rotor thrust loss seemed a very real possibility. Two days prior, a flight had been aborted due to tail rotor vibrations.

LT Belinski declared an emergency and called for the ditching checklist. AW2 Perry kept providing information on the extreme buzzing sounds he was hearing from the aircrewman's seat and kept visually checking the length of the tail rotor cable for evidence of binding or impending failure.

Approximately 7 miles from the ship, the No. 2 engine speed decreasor oil temperature started rising. At 5 miles from the ship the No. 1 engine speed decreasor also began to rise and No. 2 was in the red zone. Control of the aircraft was then turned over to LT Mike Roberts for a right-seat lineup landing. Within seconds, temperatures of the gearbox, combining gearbox, No. 1 and No. 2 engine, and No. 1 and No. 2 speed decreasor were observed to be rising, with the main gearbox oil pressure dropping. Minutes later, all temperatures were over maximum allowable and vibrations were increasing.

The aircraft commander called for increased airspeed and confirmed their position, indicated by the ship's fire control radar. Emergency flight quarters were set and after a few minutes, the helo made a normal landing and shutdown. Total elapsed time from emergency to landing was approximately 15 minutes.

Postflight inspection revealed that the oil cooler blower drive shaft coupling had failed, causing complete loss of cooling air to the oil cooler. This is the first recorded incident of this type in the SH-2F airframe.

Kaman Corporation advises that between 15 to 20 minutes under such conditions, the speed decreasor oil pressure will decrease and flight is only recommended with steady oil pressure.

Proper crew coordination and quick reaction to a situation not covered in the NATOPS manual averted a possible aircraft accident. The crew is to be congratulated on their professionalism.

Single Engine. The HAC of a CH-46 had his hands full after liftoff from an LPH. He was climbing out at 70 knots passing through 150 feet when a loud bang was heard, accompanied by fluctuating No. 2 engine N_f. Number 2 torque dropped to near zero, and T_5 rose to 900°C.

The No. 2 engine was secured and single-engine flight begun. Fuel was dumped, and the helicopter stabilized at 35 feet above the water. The HAC flew to a land base and made an uneventful landing. The crew and 14 passengers heaved a sigh of relief at the great job the HAC performed to avoid a ditching.

Good on 'ya, 1stLt J. E. Etter of HMM-165.

CAVU — Except for Feathers!

C-A-V-U. Ceiling and visibility unlimited. Pilots' ideal weather conditions. Occasionally it deteriorates to conditions less than ideal in fog, rain, dust, haze, or smoke. But how about — feathers!

An instructor pilot and his student were shooting multiple GCAs on a typical CAVU day at a southwestern airfield. After several conventional and otherwise routine radar approaches, during climbout the *cockpit* became IFR. The twin-engine trainer collided with a freshly and abundantly fed seagull! Needless to say, the gull's goose was cooked as it struck the nose of the aircraft and became lodged in the heater air inlet duct. The cockpit immediately filled with feathers and the ensuing odoriferous aroma of baked fish and fowl. Despite the impairment caused by the wayward gull, the crew managed to remedy the situation and wrestle the bird(s) back to earth without further incident.

1

Another starboard side MOVLAS recovery

By CDR T. W. Gravley

2

3

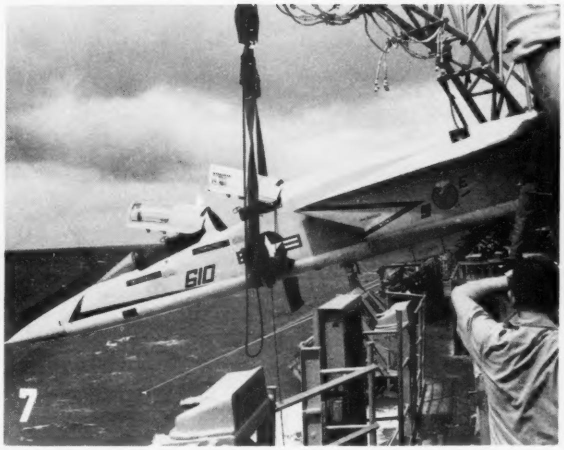
4

THE USS ENTERPRISE with CVW-14 embarked was conducting RIMPAC operations in midocean. The second launch was going well until at 0752, the crash alarm sounded.

A RA-5C had rolled into the catwalk just aft of catapult No. 4. The crash crew manned up their positions, and the MB-5 crash truck and the TAU were moved into position. Plane handlers and directors attached tiedown chains to the mainmounts of the *Vigi* to prevent it from continuing over the side. A KA-6D positioned on catapult No. 4 had also been struck by the RA-5C. The tanker was taxied forward to clear the area. The KA-6D suffered a large tear in the vertical stabilizer and rudder.

The *Vigi* rested at 30-40 degrees nosedown with the intakes on the lifeboat rail and the forward edge of sensor station No. 4 on the deck edge (Photos 1 & 2). Shortly after the aircraft came to a stop, a fuel leak from the aft area was ignited by hot tailpipes. The fire was quickly extinguished by the flight deck fire party (Photo 3).

The aircrew was still in the aircraft, and before any recovery attempts could be made they had to be removed from the aircraft. The Tilly was positioned on the starboard side of the aircraft as close to the deck edge as possible (Photo 4). A crash and salvage crewmember strapped on a safety harness and crawled down the turtleback of the RA-5C to a position just aft of the rear canopy. He then tossed a line to the RAN who tied the



line around his chest and stood facing aft in the rear cockpit. With the linehandlers on the end of the line and the line through the hook on the hoisting cable of Tilly, the RAN lowered himself over the side of the aircraft, swung free below the catwalk, and then was pulled up and brought aboard. Following the same procedures, the pilot was then recovered.

As blue water operations were being conducted, the decision had to be made about getting airborne aircraft aboard as quickly as possible. It was determined that a minimum of 30-40 minutes would be required to get the aircraft out of the catwalk and clear of the landing area. The decision alternatives available were limited to: 1) push the RA-5C over the side; 2) recover airborne aircraft with the RA-5C tail over the foul line and the FRESNEL lens blocked, which would call for a starboard MOVLAS recovery (Photo 5); or 3) launch tanker assets to ensure fuel was available which would entail a respot to clear either cat 1 or 2. The decision was made to go ahead with the recovery using a starboard MOVLAS recovery, ensuring that the LSOs would be particularly critical about aircraft lineup.

The flight deck was cleared, recovery stations manned, and the recovery commenced. The recovery was made professionally and quickly. Once all aircraft were aboard and spotted, the recovery of the *Vigi* was commenced.

A bellyband sling was placed around the aircraft with Tilly in position (Photo 6). The aircraft was then defueled, the arresting hook lowered, and the catwalk rail around the nose gear cut away. A chain and tractor were attached to the tail hook and Tilly slowly lifted the aircraft to deck level (Photo 7). After ensuring the gear was down and locked, the tiedown chains were removed. The aircraft was then moved backward using Tilly and the MD-3 tractor with a line attached to the tail hook. Once the aircraft was back on deck, the brake pressure was pumped up and the *Vigi* was then towed to its normal spot just forward of elevator No. 3.

The professionalism displayed by all personnel involved in the emergency was superb. The quick, orderly tactics utilized by flight deck personnel and the safe recovery of airborne aircraft utilizing an unfamiliar recovery enabled the ship/air wing to a save a valuable asset. The RA-5C suffered only delta damage and was flying within 30 days. Once again, the continuous training required of flight deck personnel and aircrews paid off in big dividends.

When you consider the shape it's in, it's no longer a compliment to be told someone thinks the world of you.

Ace L.

Just *who* can you believe, anyway?

By LT Bill McMurry
VF-126

GOOD old trusting naval aviators. When a qualified individual feeds them information, they may have doubts, but they usually believe it after cross-checking to be sure. Well, here's a *true* example of how a crew employed careful, accurate procedures and yet came uncomfortably near encountering extremely hazardous weather conditions which could have placed them *in extremis* during landing.

Two seasoned aviators were flying their TA-4 from NAS East Coast to NAS West Coast with two fueling stops in between. The junior of the two, a commander, made a preliminary check of weather for all proposed stops en route before filing. He was informed that stop No. 1, NAS Southwest, had present weather of 400 overcast and was expecting 1800 to 2000 broken by the crew's ETA. Additionally, he was told that NAS Southwest, in fact, had a better weather forecast than the chosen first alternate. The crew then filed. As a part of the formal weather brief, they were given weather of 600 overcast for NAS Southwest, with expectations of better weather to follow soon. "Sounds good and improving as forecast," they said to each other and headed for their aircraft.

The flight progressed smoothly. Thirty minutes away from NAS Southwest and overhead an Air Force Metro facility, the crew called for an updated forecast of their destination. The reply was, "Presently 700 overcast forecasting 1800 over within 1 hour." No mention of ice or snow or other problems was made. Great! The trend had been established. Current weather had gradually increased from 400 to 600 to 700 overcast, and no bad weather was expected.

Five minutes out of the Air Force Metro, while doing penetration checks for descent, the crew received this "Oh,

Think about it

by the way" transmission from *Center* (of all places): "NAS Southwest advises that you're going to have to make an arrested landing because of the accumulation of 5 INCHES OF SNOW AND ICE on the runway!"

Needless to say, this somewhat unsettled the crew, who had no great desire to fly through snow and ice heavy enough to require an arrested landing. Well, fine . . . let's switch back to Metro (the same one called before) and find another field. Metro stated that NAS Southwest's weather was reported the same as before. The crew then requested that alternate No. 2 be checked, since alternate No. 1 was in the same general vicinity of the destination. Alternate No. 2 was reporting VFR. Now . . . *who* can you believe? Fortunately, the crew was able to look out in the general vicinity of alternate No. 2, and the weather was in fact clear. They refiled and landed there.

Upon landing, these two gents were kind of curious about how things got so mixed up, so they called Ops at NAS Southwest. What they found out was that it had been snowing there for over 2 hours, that the present accumulation was 5 inches and getting worse. "Why isn't that on the sequence report?" they wanted to know. "We only expected flurries and have been expecting it to quit any minute." "We're waiting for the next report to update," was the reply.

The crew remanned and continued on their way, landing at NAS West Coast in fine shape. But the thought of what could have happened lingered on. One obvious aspect of their planning was that they chose to fly through areas providing many different alternates, and they were prepared to land at several different fields. Obviously, professional planning paid off.

the next time you plan a cross-country.

A SAD WINTER TALE

THE night before the accident the CH-46 crew was assigned the SAR duty. The next morning the SAR crew and another crew were scheduled to perform a troop lift, with an 0700 takeoff. The senior of the two pilots launched and told his wingman to remain on deck while he checked out the weather and the zones.

A few minutes later the junior was told to launch and to meet the senior at the pickup zone. After loading their troops they proceeded to the drop point. However, the weather turned sour and both helicopters returned to the pickup zone. They shut down, offloaded the troops, and proceeded to a chow hall for breakfast. It was 0730.

An orderly contacted the junior HAC and advised him he was scheduled for an 1130 flight to pick up 12 passengers at another area. Ceilings and visibilities vacillated between below minimums, up to minimums, and back down. It was snowing, temperature was 32°F, no spread, visibility varied between one-fourth and one-half mile, winds were NE at 6, sky was obscured, and clouds were low broken at 400 feet and overcast at 2000 feet.

About 1140 the helicopter took off and disappeared from sight in the snow. Witnesses disagreed on which way the pilot turned or how high he climbed. They could hear the helicopter but couldn't see it. At one point witnesses saw the helicopter in what seemed to be a hover at 300 feet. One said the helo backed up for 2 or 3 seconds while it was visible. Then it nosed over, started a left turn, and disappeared from view.

Within the next minute or two the helicopter crashed in a flat attitude. It was found that the rotors were turning very slowly at impact. There were no survivors. A DIR of the engines revealed they were not operating at impact.

The operations were being conducted in the field and normal squadron controls were missing. The senior cautioned the junior not to launch if the weather was too bad, but the caution went unheeded.

There were many reasons for this mishap. Some of them were:

- Pilot error in judgment for taking off.
- Pilot disorientation on instruments, or trying to remain VFR in IMC.
- The weather was below minimums (legally) and way below the pilot's capability.
- Icing.
- Engine failures.

THE CONFLICT

DURING a mild spring evening with all events going slowly, the first significant event – a thunderstorm (one of nature's specials) – was about to drench the unsuspecting airfield. At about the same time, a group of manmade machines (airplanes) approached the airfield. As you can no doubt guess, a conflict was about to take place.

Nature unleashed her fury, and the airfield soon dropped to nonprecision minimums. The first airplane *(Fudd)* in the area was ready in all respects. Although inexperienced, its warriors (pilots) were eager to take on Mother Nature. Down the approach corridor they came, into the storm's heavy rains. As they approached minimums, they were made aware of a second player in the arena (Executive Jet Transport), supposedly on their side. Only this second player was a bit low on fuel having already been in one conflict and about to enter his second (a divert). Aware of the Executive's waning energy (low fuel), the *Fudd* elected to expedite his approach by speeding up. As the "speeding" *Fudd* broke out, he was high, fast, and halfway down the runway.

Already having had a taste of Mother Nature's might on his approach, our befuddled warrior decided to avoid further combat and land. The field arresting gear loomed ahead, and with hook extended . . . one *Fudd* arrested in the gear. But, Great Grampaw Pettibone! How about his fellow man whom he was helping?

Mother Nature, not to be cheated, unleashed another cruel trick: shut down the ground (navaid) power supply for just a second to let that manmade machine fend for himself. Undaunted, our brave Executive elected to fly it on his own. Using his system radar, he continued. As another haven's runway passed under the Executive aircraft, so the fuel passed through its hungry engines. The second manmade machine, drained of his energy, stopped – at last free of Mother Nature's fury (with 200 pounds remaining).

Finally (thank goodness), enter into the arena the three remaining warriors. These three were all weather (A-6) types, and the first two won with almost no incident. The third one chose to return to the starting place when he saw further combat perilous.

As the warriors compared notes, the newest vet (*Fudd* driver) was heard to exclaim, " I thought we always were given (by Approach Control) the best way to win a conflict such as this!" (TACAN approach flown vice available GCA.) "Not so, not so," echoed our combat-hardened heroes. "Sometimes in a conflict such as this you have to think for yourself. Choose and request your own best manner of approach."

"Mishaps are often caused by one or a combination of factors. Some are attributed to: pilot, weather, mechanical, material, or supervisory. But how about the

CONFUSION FACTOR

TO set the stage for Confused Flight, a rundown of the lineup is in order to establish the events that led up to this near-catastrophic mishap. The flight scheduled to depart NAF Divert for the return to NAS Homeplate consisted of two fighters, call signs GoGo-1 and -2. The crew of Dash 1 consisted of an experienced second tour pilot and an inexperienced first tour RIO. Dash 2's crew consisted of an inexperienced first tour pilot and an experienced second tour RIO. Dash 2's RIO phoned NAS for the weather, copied it as 1500 broken, temporary conditions of 500 broken, 1500 overcast, 3 miles visibility. (It was later determined that he misinterpreted it and the actual forecast

weather was: sky partially obscured, measured 1000 broken, 1500 overcast, 1-3 miles visibility in rain and fog.) The flight would take off, fly to the destination, and shoot a section approach to dual arrested landings on the parallel runways at NAS. Routine flight home after a weather divert. Sounds simple and unconfusing enough. Launch!

Brief(?), taxi, takeoff, and climbout were routine. Check-in with Center revealed that the weather at NAS was more like the forecast above, but Center's weather was nearly 30 minutes old. Upon switching to NAS Approach, GoGo-2 reported that his altimeter was unreliable. Simultaneously the station's TACAN went off the air. Checking in with Approach, GoGo lead advised that they already had the weather from Center and requested a section approach to dual arrested landings – GoGo-1 landing 27R and GoGo-2 landing 27L. This request was relayed to tower who in turn denied it. Lead then requested a section approach to be terminated by Dash 2's arrestment and his executing a missed approach for a box-pattern GCA/arrestment. Tower approved this. (At this point, GoGo flight was unaware of the actual weather sky partially obscured, 500 scattered, measured 700 broken, 1000 overcast, 1 mile visibility in rain and fog. (Nobody asked – nobody told.)

While in their approach from altitude, executing a 360-degree descending spiral to reach the 10-mile IAF at 2500 feet, another aircraft checked in, requesting approaches. *He* was issued the new weather as: 500 scattered to broken, 1000 overcast, 1 mile visibility in light rain and fog. (It was unknown whether the GoGos received this update.) Approaching the final fix anticipating 27L, the primary instrument runway, GCA informed Approach that recovery would be on 27R. The flight of GoGos acknowledged the runway change. Breaking out of the soup at one-half mile, Lead "kissed-off" his wingmen and executed a missed approach. However, GoGo-2 was slightly misaligned with the centerline and decided that a safe approach and landing couldn't be *salvaged* this pass, so he, too, executed a missed approach!

After a brief yet confusing time obtaining separate frequencies from Departure Control, GoGo-1 and -2 were vectored downwind for individual approaches and, eventually, arrested landings. Shortly thereafter, GoGo-2's fuel gages started to unwind and eventually pegged at ZERO! Aware that he now had compound problems, Dash 2 declared an emergency and requested *both* runways be made available to him for possible arrestment. At this time another aircraft checked in for practice approaches and was vectored on the same frequency as GoGo-2. Reiterating his plight, GoGo-2 was finally vectored to short final and GCA.

Making contact with GCA, GoGo-2 had to inform them that he was in an emergency situation (nobody told GCA that an emergency was in progress). He again requested that both runways be made available to him, but this was denied as his leader, GoGo-1, was on short final to 27R. Dash 2 was to be arrested on 27L. Riding a little low and right, GoGo-2 broke out at near minimums. He sighted what appeared to be the strobe and threshold lights for 27L. Right? Wrong! He was lined up for 27R, the same runway that his leader was on – and in the A-gear ahead of him! An aircraft awaiting takeoff clearance frantically attempted to warn GoGo-2 of his impending potential disaster, but the efforts were in vain, as he was on another frequency. The tower tried to get the crash crew to expedite getting the arrested bird out of the gear.

While all this was going on, GoGo-2's RIO switched to Guard and informed *ALL* that they were on 27R for arrestment. His pilot made final alignment on the centerline and looked for the wire at the 2500 marker but couldn't pick it out. He finally sighted it at the 3000-foot marker, complete with his leader attached to it. (What a place to effect a join-up on your leader!) Fortunately, by displaying astute airmanship or groundsmanship as the case may be, and mustering up all that's left of his rapidly depleting composure, GoGo-2 raised his hook, engaged nosewheel steering, and skillfully (or luckily) maneuvered his aircraft around his thoroughly confused leader. The rest of the hop went according to the books, and both birds taxied back to the line unscathed, yet thoroughly confused as to what had transpired and why. Luck played an important part this day.

What started out as a routine hop back to Homebase nearly ended up as a catastrophe. Fortunately, it was only an incident this time. Beginning with the misinterpreted weather brief, the aircraft and navaid malfunctions, coupled with the communications mixups between aircraft and controlling agencies, proved almost too much for this aircrew. It once again points out the importance of a complete preflight brief to include not only the routine and expected but the nonroutine and unexpected, for they occur when least wanted. Proper coordination and communications by all could have returned this flight back home – *routinely* without any confusion factors thrown in. Think about it the next time you are planning your flight to the land of UNCONFUSED. ◄

Anymouse

Checks OK; Let's Go!

IT was the end of a long 8-month deployment, and everyone was ready to go home. Due to the seizure of an air-conditioning turbine, 522 did not make it off with the main part of the fly-off, but launched alone 5 hours later. After launch, the aircrew noted that the radar altimeter was inoperative and the pressure altimeter was stuck at 60 feet until passing approximately 400 feet. At that time, the pressure altimeter caught up and, although a little sticky, worked normally to cruise altitude of FL210. After 1½ hours, the crew requested a climb from 210 to 230 to clear some weather ahead. This was approved, but after applying power and raising the nose, they noticed that the altimeter was stuck at 20,900 feet and the VSI remained at zero. The airspeed indicator showed a steady increase in airspeed, eventually stopping at Mach 1.5. The pilot leveled at what he thought was FL230, although the altimeter remained at 20,900, and notified Center of the problem.

He made his request on the No. 1 radio, since radio No. 2 had been inoperative since launch. He requested an unrestricted descent to remain VFR to Homeplate, now about 80 miles away. However, he got no response to his request, since the No. 1 radio also had failed. About 50 miles from home, the TACAN also stopped working. The crew continued their descent VFR, found a landmark, but went IFR momentarily and lost contact. Finally, they broke out VFR for good and entered the break. They landed with 3000 pounds of fuel remaining.

There was not really any get-home-itis involved here – just an aircraft that was slowly dying. The crew handled the situation well. Had it been IFR at home, this could have been an accident. No matter how well a crew performs, they must be ready for any situation. Being safe is being prepared!

Iwastheremouse

Haste Makes . . . Near-Disaster!

THE pilot was No. 3 in a three-plane A-7 flight on night fleet CQ. Lead received takeoff clearance while the flight was still on the taxiway, and took the runway without holding short. Dash 3 rushed through his takeoff checklist on the roll and overlooked putting the headknocker up. (The headknocker is not part of the takeoff checklist on the instrument panel.) The pilot discovered the headknocker while taxiing up to the cat after his first trap!

Soreneckmouse

Flight leader technique can do a lot to avoid setting up situations like this by getting positive confirmation from everyone in the flight that they are ready for takeoff.

Clearly Fumbled

AT approximately 1345 one afternoon, an SH-3 taxied between Hangar 1 and a P-3. This is a marked roadway, not a taxiway. The main rotor blades passed over the wingtip of the *Orion* and above cars parked adjacent to the roadway.

Two enlisted men enroute to

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT
PREVENT AN ACCIDENT

service the P-3 had to take evasive action, as the taxiing SH-3 showed no signs of slowing down. The men were walking along the edge of the roadway.

There were no wingwalkers or safety observers of any kind to check clearances. Would you believe there were two linemen riding a tow chasing the helo with the tow bar being pushed in front of the tractor? I found out the P-3 was obstructing the proper taxiway because that was as far as it was permitted to go, due to NAS observing quiet hour for an inspection.

Many people watched this extremely hazardous operation in utter disbelief. Why the HAC didn't shut down and request a tow to his line is beyond me. I also wonder if the tower cleared him to taxi without ensuring the area was unobstructed.

Questionsmouse

Up and Down

AIRCRAFT No. 109 was scheduled for a compass swing. However, once the aircraft reached the compass rose, its compass transducer was found to be defective. We downed the aircraft, but the pilot decided to put it back in commission and took off on a radar mission. When he returned later, he downed it.

Two days later, aircraft No. 81 was down for a compass adapter. It was received, installed, and scheduled for the compass rose. The pilot didn't want to take the time to swing the bird, so he put it in an up status and went flying. As far as I know (3 days later), 81 still needs to be swung.

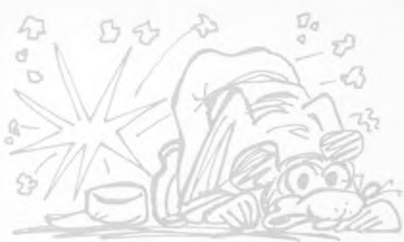
The way things are going, some pilot is going to up a downed bird and get himself in a heap of trouble. Then it will fall back on maintenance, and we'll be ripped off for something we couldn't control.

Iratemouse

On Centerline

RECENTLY, while taxiing our P-3 into another squadron's flight line, it became obvious that the lineman was intent only on ensuring that our nosewheel was on the guiding line. He was not observing obstruction clearance, particularly on the wings. Someone in the crew spotted a workstand that our wing would have struck if we hadn't stopped. When we stopped, it took the lineman a long time before he understood our pointing and gesticulating to realize that we were concerned about the workstand. Had this occurred at night, we probably would have dinged the aircraft. Please, maintenance officers, emphasize precision, but also instruct your lineman to keep their heads on a swivel, too.

Meekmouse



The Old Lamplighter

DURING a recent weapons detachment, two attack RAG pilots took a replacement pilot to the target to light the flare pots. This was not normal procedure. Most lighting is done by civilian teams, and the pilots were not trained in specific target procedures. Water, refreshments, and an emergency radio were taken in the event of lost/missing/stuck truck. One instructor pilot had made the trip in the daylight, but this was the night fam for all hands. After lighting the flares, the task group retired to watch the show. One lucky aviator extinguished the flares in the bull's-eye, and after the departure of that event, the lamplighters ventured forth to relight the flares. The replacement pilot found the bomb that had put out the flares and distributed portions of it (a dud Mk-76) to the unsuspecting instructors. After a 500-foot walk, the magnesium in the spotting charge began to ignite. The pilots dropped the pieces, and all portions began to explode and burn. After considerable running and shouting, the pilots were recovered uninjured, and the bomb was abandoned at the scene.

Burnedupmouse

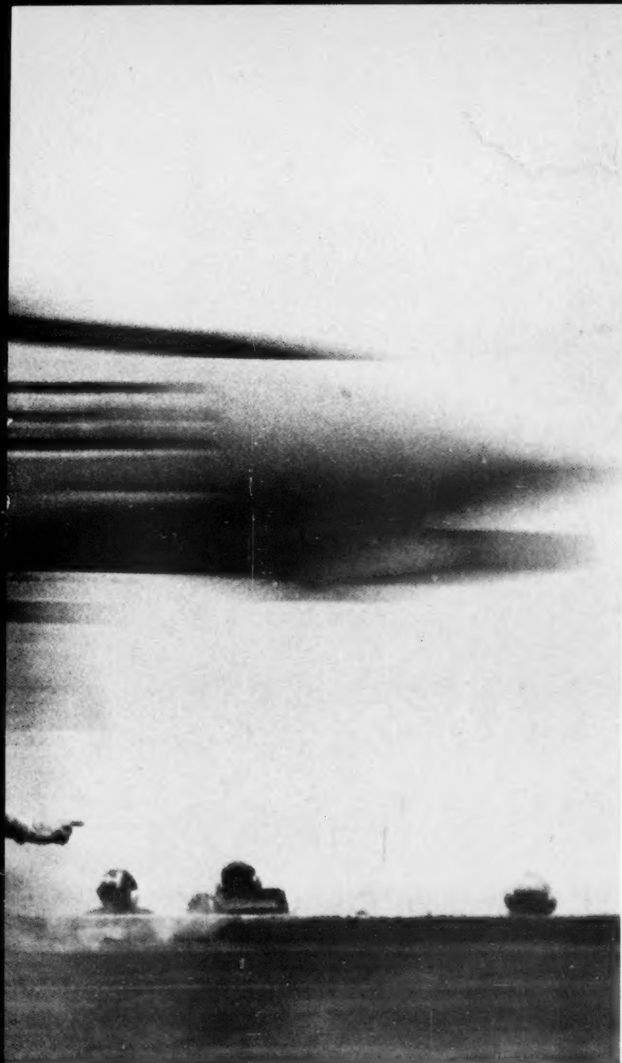
The survival rations brought along indicate that the trip was not motivated exclusively by a dedication to hard work. There's nothing wrong with that, but the range tasks should have been left in the hands of those familiar with them. As the old saying goes, "If you don't know what it does, don't fool with it."

AVIATION SAFETY STARTS ON THE DECK

By LTJG Ben Harmon
VAQ-133

WE often read in APPROACH about aviators doing battle with the elements, dealing with inflight emergencies, and other hairy situations. It has occurred to me that it might be interesting to look at safety from the flight deck point of view. I'm the Line Division officer and daily hear remarks concerning the habits and actions of flightcrews. Two thoughts have come to mind. First, we as naval aviators have a certain image to maintain: we're the professionals, right? How can we expect our men to do their job properly when they see us every day taking shortcuts and not following proper procedures? Secondly, safety has got to start on the ground. If we can't man up, start engines, and launch properly, how are we ever going to safely complete a mission?

Let's consider those actions of ours that might endanger our maintenance troops on the flight deck. Those guys work hard up there, and they deserve respect. After we preflight we can strap in and close the canopies. The



maintenance types, on the other hand, are constantly exposed to jet blast, intake suction, moving aircraft, yellow gear, etc. The last thing they need is for us to jeopardize their well-being! Jet blast seems to be one of the most common dangers. Everybody has seen a body come sliding down the deck at one time or another. A call to the air boss that you're coming up on the power can minimize that problem.

Paying attention to what's going on outside the cockpit can save our guys some aches and pains, too. In a recent incident, an unsuspecting troubleshooter got a healthy welt on his back as he was conducting final checks because a pilot decided to cycle his controls behind the JBD without first clearing the area. In a similar occurrence, a man working on the tail of an aircraft was knocked to the deck by the rudder when the pilot decided to wipe out the cockpit before his plane captain could adequately clear the area.

A common complaint I've heard about flightcrews is that they don't shut down their aircraft properly, leaving switches on, parking brakes not set, and, heaven forbid, seats armed. Besides the obvious damage which could occur to the aircraft from leaving equipment on or parking brake off, there is a very real threat to personnel here. The last thing a plane captain needs is to climb into the cockpit to do his turnaround inspection and get an unwanted ride on an armed ejection seat.

We have to consider leadership-by-example philosophy when discussing flight deck safety. Those of us who wear khaki always stand out, but never more so than when doing something wrong! It's hard to convince your men of the necessity of wearing goggles and headgear when flightcrews so often come to the aircraft with helmets in hand, and even after the engines have begun to turn do not put them on or leave visors up. Another time khaki stands out is when sightseeing during UNREP, for example. Being used to wearing LPA life preservers when manning up, it's easy to forget to put on flotation vests when out of flight gear. The oversight doesn't go unnoticed!

All of this leads to maintaining that image of the naval aviator. We've spent enough time in training that we ought to be thoroughly professional in every respect. Of course, the professionalism isn't just there, we have to work at it every day. Sometimes the slips are dangerous; other times they're just plain embarrassing. Under the heading of dangerous falls are a couple of recent incidents. An aircraft was launched prematurely because the pilot hit the wrong switch and briefly turned on his lights during a night launch. Another premature launch could have occurred in a second incident because the right seater in a multicrew aircraft was observed making rapid hand movements around his head while in tension. Everybody knows only the pilot is supposed to salute the cat officer, or do they?

Along with the professional image, there is a certain fearless *savoir faire* that goes along with being a naval aviator. This is where the embarrassment can come in. An aviator recently found it very difficult to maintain his cool when informed by a plane captain that he had strapped in without first removing the safety pins from his ejection seat. It could have been worse if he had wanted to eject. In another incident, a cat officer had an unusually difficult time getting a pilot to throttle back after suspending the catapult. It took so long, in fact, the cat officer deduced the pilot must have had his eyes closed. The temptation is great to close your eyes, but really!

Safety is as important on the flight deck as it is in the air. We have to keep our eyes open, not just for the cat shots, but anytime there is the potential for an accident. It is up to us, the professionals, to set the example.

NATOPS and YOU

"Scope. This manual contains information on all aircraft systems, performance data, and operating procedures required for safe and effective operations. However, it is not a substitute for sound judgment. Compound emergencies, available facilities, adverse weather or terrain, or considerations affecting the lives and property of others may require modification of the procedures contained herein." – OPNAVINST 3710.7J

By Maj N. L. McCall, USMC
NAVSAFECEN NATOPS Coordinator

EVERYONE knows that "you can't legislate headwork" and that "the airplane can't read." Nonetheless, accident boards continue to blame NATOPS when situations not specifically addressed in the manuals occur. In some instances, NATOPS is in fact deficient. In others, the poor judgment displayed by the aircrew leads one to believe that they would have mishandled the situation no matter what NATOPS said.

The classic of this type was when a pilot made three flagrant NATOPS violations en route to a crash. If he had followed NATOPS guidance in any of the three areas, he could have prevented the mishap. The accident board glossed over the violations and recommended a NATOPS change. They failed to mention how they expected the pilot to be familiar with the proposed procedure in light of the fact he seemed to know so little about existing procedures.

It is unrealistic, if not impossible, to expect NATOPS to provide guidance for every conceivable situation. The NATOPS program is designed to provide standardization, not to make robots out of aircrewmen. One's knowledge of NATOPS is a good indicator of his professionalism, but so is his ability to handle unusual situations. So much for this side of the coin; now let's look at the other.

OPNAVINST 3510.9F says, "NATOPS manuals, NATOPS flight manuals, and checklists are developed by the users for the users . . . If an individual knows a better procedure, or if he sees conflict between NATOPS and other doctrine, he is obligated to propose a change to the applicable publication. *Initiative in formulating new or improved procedures must be encouraged.*"

This is the most frequently violated of all NATOPS related guidance. It is common to read incident and accident reports which say "NATOPS should be changed" and/or "The following squadron policy has been adopted." All too often in these cases no NATOPS change proposal is submitted. Many times one squadron's accident could have been prevented by proper NATOPS followup of another squadron's incident.

Don't expect NATOPS to think for you. Propose a change if you have a better idea.

LT Larry Graves
LT Dave Stoddard
AMS3 Roy Jackson
AD3 Taylor Kennedy
ADAN Clay Isemann

BRAVO ZULU

LT Graves and his flightcrew in *Saltspray 22,* an SH-3G from Fleet Composite Squadron EIGHT, were established in a 5-foot hover at sea, recovering a BQM-34A target drone. With ADAN Isemann on the passenger door holding the drone hook, and LT Stoddard at the controls in the left seat, a loud bang was heard as the helicopter suddenly lost all power on the No. 1 engine. Rotor RPM rapidly dropped and the aircraft began to settle into the water.

ADAN Isemann jettisoned the drone hook and was pulled into the helo by AD3 Kennedy, as LT Graves two-blocked the speed selectors. LT Stoddard stabilized the aircraft on water entry. AMS3 Jackson quickly completed a check of the airframe integrity as water filled the cabin through the sonar hole; immediate water takeoff procedures were initiated. On the back side of a wave in a sea state of three, a water taxi run of 15-20 yards was accomplished, with No. 2 engine at topping but providing only 85 percent torque. Winds were 10-12 knots. The helicopter lifted from the water with rotor RPM decreasing through 94 percent. At 80 percent rotor RPM and 35 KIAS, the aircraft stabilized in a level attitude as the pilots began a series of cyclic flares to gain altitude and rotor RPM. The airframe skipped at least twice on the surface, with the pilots and crew being soaked as seawater splashed from the sonar hole throughout the cabin and onto the front console and instrument panel.

Once airborne at 15 feet, the crew established a 50-100 foot per minute rate of climb, declared an emergency, and returned the helicopter 22 miles to NS Roosevelt Roads for an uneventful running landing and shutdown.

LT Graves, the squadron's H-3 Type Leader and NATOPS Officer, and LT Stoddard, a qualified HAC and a former H-3 water landing instructor undergoing additional mission training, are both to be congratulated for their superb airwork, remarkably cool thinking, and their quick reaction in a difficult and dangerous situation. The two pilots managed to get the H-3 airborne with a single engine that was operating at severely diminished efficiency. Their combined aeronautical skills, along with an outstanding display of flight crew coordination and professionalism by AMS3 Jackson, AD3 Kennedy, and ADAN Isemann saved the Navy a valuable aircraft that might otherwise have been lost. Well done!

Although the SH-3G NATOPS manual advocates relanding the helicopter if N_r decreases below 92 percent, it is important to remember that the NATOPS manual "is not a substitute for sound judgment." The experience level and obvious complete understanding of the aircraft's capabilities aided these pilots in correctly assessing the situation. — Ed.

From left to right: LT Larry Graves, LT Dave Stoddard, AMS3 Roy Jackson, AD3 Taylor Kennedy, and ADAN Clay Isemann.

The first 100

By LTJG Pete Wilson
VA-82

"301 *Corsair* ball, 4.0"

"Roger ball, *Corsair*, 23 knots of wind . . . "

"You're settling. Power. Power! Wave off! Wave off!"

THAT was the worst! All those rules do mean something: don't finesse a low, never accept a low ball, only accept a centered ball, don't go low! Those rules were written in blood and are always being relearned, never forgotten, but relearned.

Then there's pride. Entering the break as slot man in an A-7E diamond, with CAG in the lead. The interval looks a little tight so CAG spins the diamond. Halfway through the spin a voice comes over the air, and in a flat monotone revealing no emotion, makes our hop something special by saying, "Nice, *Corsairs*."

Think of crisp days in the Mediterranean, brilliant moonlit nights, and flying. We live with flying, think about flying. We're surrounded at all times by the ultimate flying environment, *carrier aviation.* Squadron life and

conversation consists, in the main, about flying. A group of men brought together by their love for flying. Personality conflicts surface from time to time, but in the end are conquered by that constant desire to fly.

Then the day comes when all that training is put to the test. It's a Case III recovery. The weather is solid overcast from 13,000 feet right down to minimums. The entire approach has to be perfect to get aboard. Pushing out of Marshall on time you don't dare get off the gages for you can feel the vertigo-inducing milkiness all around the aircraft.

As platform is reached, you slow down the *Corsair's* rate of descent on the way to 1200 feet. Doublecheck hook down. SPN-41 is up and working, and you concentrate intently on the needles, inching over to the final bearing. Reaching 1200 feet, you are still in a solid overcast, but you have managed your fuel consumption the entire hop so as to arrive at the ramp with max trap.

At the 10-mile gate, CATCC instructs you to go dirty. The *Corsair* tries to balloon a little as the gear and flaps come down, but you keep the aircraft right at 1200 feet. Methodically the landing checklist is completed: gear down, flaps down, hook down. Everything is doublechecked. At 3 miles you reduce power and start down the glide slope, on-speed, on final bearing. By this time CATCC has locked your plane up with the SPN-42 gear, the ship's ACLS equipment. For safety's sake, the SPN information is cross-checked with the SPN-41 needles.

At three-fourths of a mile CATCC asks you to call the ball, but a quick glance outside is all that is needed to see that you are still IFR. Clara! A moment later a voice comes over your headset, "301 paddles contact, you're looking good, keep it coming." You trust those guys on the platform. Then, suddenly, the radar altimeter, set at 200 feet, goes off. Instinctively you add power, another quick glance outside – a ball! Only time for an abbreviated "*Corsair* ball!" Followed immediately by a "Roger ball, *Corsair*, working just a little high. OK, now catch it in the middle. Little power." Then it's over.

Suddenly, surprisingly, the aircraft touches down. Instantly, the throttle is slammed to military in anticipation of a bolter, but in that fraction of a second the arresting wire grabs hold. You're safely home!

Slowly, as the day and night traps build in numbers, an important ingredient, *confidence*, grows also. You learn to anticipate events before they happen. And if the unexpected does occur, you *know* you can handle it. Maybe it's accurate to say that you become comfortable, but I don't think anyone would admit it.

The weeks and months go by, and then one night you're shooting No. 100.

"307 *Corsair* centurion ball, 3.5."

You trap. Somehow those 100 traps seem awfully important. You've worked hard and studied hard for them. Inside you feel a profound sense of accomplishment that only a few others will ever know. You're a Centurion. ◄

CCA aircrew teamwork

By CDR W. R. Needham
VA-65

SOME nights at sea, usually the ones with clear skies and bright moonlight, Case III recoveries proceed like clockwork, demonstrating the triumph of knowledge and technology over ignorance and superstition. The aircrew's main concern at the conclusion of one of these successful recoveries is to await the arrival of the LSO and have their OK-3-Wire suitably acknowledged in front of squadron peers. However, there are other nights, so let's change things just a bit and watch what happens. The operational environment is: night, blue water operations, weather, a high broken to overcast layer, 1 to 2 miles visibility in a light mist, 20 knots of wind. Frontal passage is expected prior to the end of the next recovery. Associated with the front is a squall line which could provide temporary conditions of heavy rain with visibility reduced to less than one-half mile and peak wind gusts of 45 knots.

Now we have a situation with the potential for testing the nerve of the most stout-hearted and fearless aviator. After a recovery under the above mentioned conditions, the comments to be made by involved aircrew are likely to be something like this: "CCA must be trying to get me, I had so many heading changes on final I think they were trying to induce vertigo." "I didn't have a chance on my first two passes, and by the way, why did the ship turn into that storm?" "I heard the tanker pilot tell departure where the storm was, why did they turn into it? You know three of us had to tank because of the turn?"

These emotional comments about CCA and ship handling have been heard in many readyrooms. However, while from the pilot's point of view, the comments are well founded, a better understanding of the environment and the necessary actions by the ship to accommodate the changing conditions may have better prepared our pilot for his recovery. He may even have been able to help.

Let's go back to CCA an hour earlier and reconstruct what occurred from CCA's point of view.

All aircraft are checked in and are holding in Marshal. CCA's radios, SPN 41, 42, and 43 are checked and up. Everything looks OK for the start of a normal Case III recovery; however, the CCA supervisor notes a squall line approaching from the west at about 30 knots. He informs the CCA officer who in turn discusses the problem with Air Ops, the air boss, and the bridge. The OOD computes a BRC (base recovery course), using the current/predicted wind of 20 knots from the west and passes it to the CCA officer who again looks at the radar weather picture. The squall line appears almost uniform across the scope, and the BRC will take the ship right through it. That information is passed to the OOD who, in turn, informs the captain.

Fifteen minutes later the ship is turning into the wind and the first aircraft (our pilot in his F-14, Snake 101) has commenced. At 10 nm he goes dirty and at the same time the ship encounters the first gust generated by the approaching squall. The first gust causes the ship's relative wind to shift 45 degrees to starboard. The OOD passes to CCA, "Ship's turning starboard for the wind." As the ship begins to turn, the CCA officer knows that the final bearing is now moving at several miles a minute laterally away from the F-14's position. Snake 101 must now be turned port to provide enough straightaway on the new (albeit unknown) final bearing. A "port 30 degrees" is passed to Snake 101 by the approach controller, accompanied by a broadcast of "Ship's in a starboard turn. Stand by for a new final bearing." The F-14s and A-7s behind began to "dirty up" and fall in trail at 2-mile intervals. Four minutes later with Snake 101 at 1 mile, the wind across the deck is erratic and gusty. Visibility is decreasing in rain as the ship is forced to run directly into the squall to keep the wind down the deck. The LSO advises CCA, "No chance on Snake 101," and he is waved off, as are the next two F-14s in turn. As the bolter pattern fills up, the CCA officer and approach controller's problem is rapidly becoming more complex.

Now with each change in ship's heading, the bolter pattern must be rotated to accommodate the new FB. If the pattern is not reoriented or if an aircraft in the bolter pattern fails to execute the directed turn, the old downwind pattern and the new final bearing may intersect aft of the ship, resulting in a potential midair situation. If all concerned, airborne and aboard ship, do not keep a cool head and do their part to make the best of what has become a bad situation, the problem will be worsened by there being no close control by CATCC and low fuel states for all aircraft. But CCA does maintain control, and our aviators follow direction. However, CCA is now forced to create "bolter holes" in the approaching traffic which is

now spaced 2 miles apart closing the ship. The bolter hole should be a 4-mile gap into the center of which the approach controller turns the bolter aircraft. We now have the situation which may require a number of heading changes inside 12 nm in order to slip a low state in first.

At this point, Snake 106 (the fourth F-14), in low visibility conditions, engages the No. 3 wire 16 feet left of centerline, registering the first trap of the recovery. The air boss passes the bad news to CCA, "We have to pull the crossdeck pendant, and the arresting engine is down for the rest of the night because of the offcenter hit. Wave off your next two aircraft." CCA then passes a "Delta Six," waves off the next two aircraft, and Air Ops recommends to the captain the last two F-14s downwind be tanked. The captain concurs, "Signal tank" is passed by CCA to the two F-14s. Snake 101 is now 5 miles downwind and is turned into a bolter hole created by taking an A-7 out of final and up the starboard side. However, because our F-14 pilot is a little nervous and is now out of the rain squall, he fails to fly a standard rate turn into the hole. He turns rapidly to final bearing with a high angle-of-bank. This causes him to undershoot final bearing and also close the interval on the A-7 ahead.

By the time his mistake is recognized on radar, it's too late for CCA to call him to ease his turn. The F-14 rolls out well inside final bearing, only 1 mile in trail on the A-7 ahead. CCA knows there is only a 30-second interval and either the A-7 should be waved off to provide Snake 101 a straight shot at the deck or 101 should be "S"-turned across final to open his interval and pick up the needed seconds required to provide *him* a ready deck. CCA decides to "S"-turn Snake 101 once across final and attempt to trap both aircraft. Snake 101 is told by Approach, "Turn right 30 degrees for spacing." However, as our aviator notices his ARA 63 (SPN 41) needles begin to center, he eases in a port turn to keep them centered. The ship is now in the clear with a ready deck, but 101 has failed to open interval. CCA has him continue in case the preceding A-7 bolters. A few moments later the A-7 traps and Snake 101 gets a foul deck waveoff followed by a "Signal Tank." With the squall line falling away astern, the remainder of the recovery proceeds normally.

The above scenario and particularly the comments and lack of understanding on the part of Snake 101 are unfortunately not uncommon in the Fleet. Remember, CATCC and especially the approach controllers and watch supervisors routinely have the most difficult air control problem in the world. Decisions are made in Air Ops and CATCC with the best information available at the time.

Often, the aircrew can become a part of the solution rather than the problem by keeping in mind a few thoughts: (1) know where you are in relation to where you want to go; (2) listen to what the controllers are saying to others; (3) if what you hear from a controller is not what you expect to hear, ask.

Invite your CCA officer down to your readyroom. Go over procedures with him. Be professional in attitude and in performance – join the CATCC/Aircrew team.

All Pilots: Now hear this! Herein lies the story of a helicopter lost at sea. The aircraft was perfectly capable of further flight. There wasn't any emergency, and the weather wasn't too bad...

ANGEL'S DOWN

THE crew of an SH-3H briefed aboard a big bird farm for a combination plane guard/ASW mission. They launched, assumed the role of angel, and when all the tailhookers were safely aboard, went into Phase 2 of their act.

Radar control of the helicopter was passed to the destroyer screening group. The HAC performed the automatic predip checklist, set up his coupler control panel, and soon received his first command: Mark, dip. The HAC was sitting in the left seat, and his copilot was monitoring the controls in the right seat.

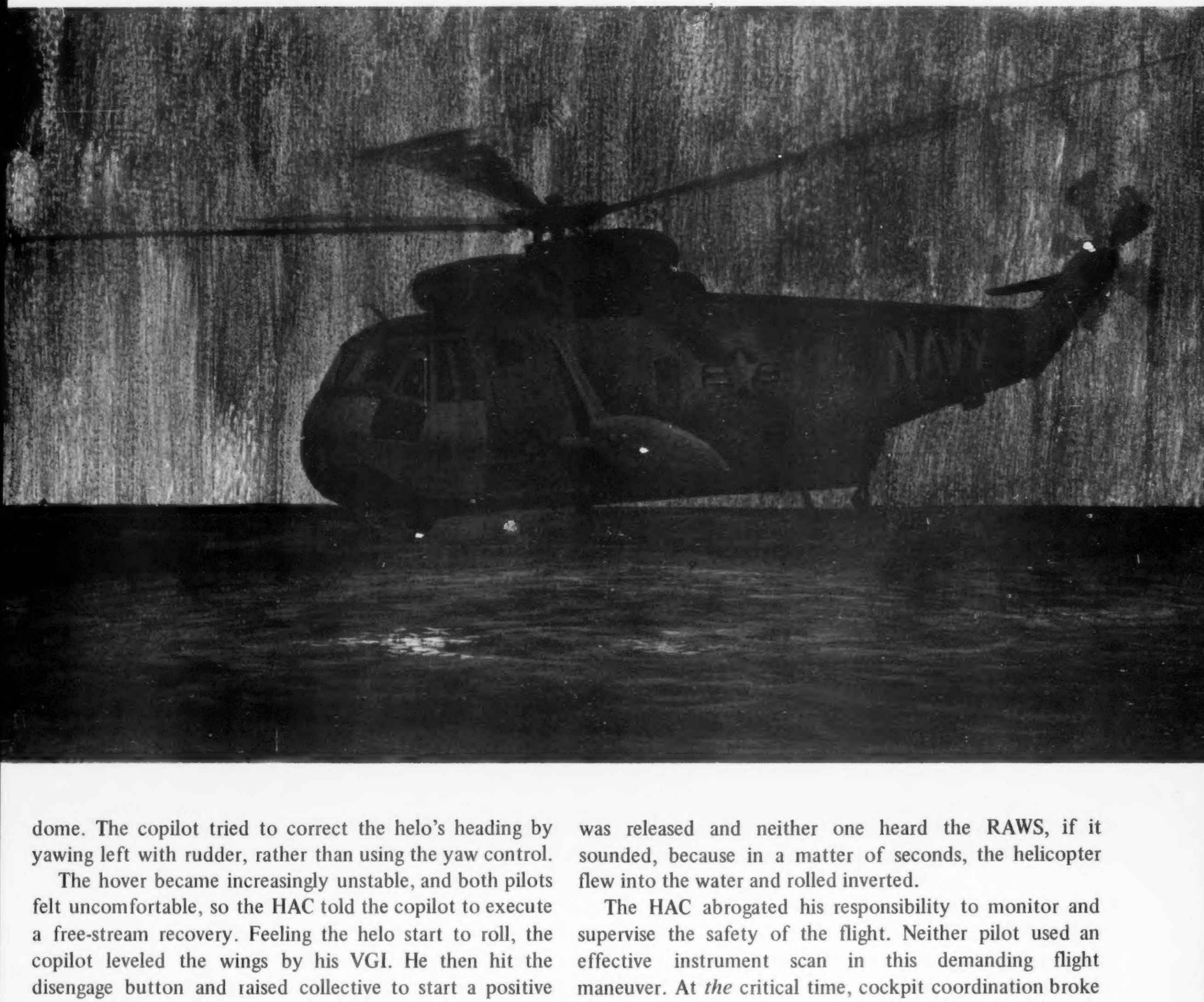
The aircraft flew a normal approach, stabilizing at an altitude of 50 feet, but maintaining a groundspeed of 10 knots. Efforts by the pilots to effect a steady doppler hover were unsuccessful. They didn't lower the sonar dome, and a waveoff was executed.

They were vectored to their next dip position and another approach was attempted. Like the first one, however, they were unable to ease into a stable hover. The HAC verified the loss of the return doppler signal, and by moving the doppler switch from SEA to LAND/ALT, the signal was regained. While attempting to stabilize the hover, the helo settled below 30 feet and the RAWS (radar altimeter warning system) sounded loud and clear.

Again they were vectored to a new dip position. Prior to beginning a third approach, the switches and pots were doublechecked. They began the next approach and entered a stable hover. The sonar dome was lowered, but when it reached the depth selected, the gages showed the dome tending aft and starboard. The sensor operator tried to center the dome, using his drift and speed pots on the sensor panel. He zeroed out the drift but couldn't center the cable – it still tended full aft. He told the HAC he had insufficient control to stop the forward creep of the helicopter.

The HAC responded by decreasing the speed pot by 2 knots. The helo began to center over the dome, and at last they were in business – but not for long. There's an old saying worth repeating: When everything is going well, don't "futzaround."

The copilot caused the helo to yaw 20-30 degrees to starboard by inadvertently putting pressure on the heading hold microswitch. When the helicopter yawed, it began to drag the sonar dome and brought it to 10-foot depth. The sonar operator reported they were dragging the



dome. The copilot tried to correct the helo's heading by yawing left with rudder, rather than using the yaw control.

The hover became increasingly unstable, and both pilots felt uncomfortable, so the HAC told the copilot to execute a free-stream recovery. Feeling the helo start to roll, the copilot leveled the wings by his VGI. He then hit the disengage button and raised collective to start a positive rate of climb. He then began the free-stream recovery and told the sensor operator to stop the dome.

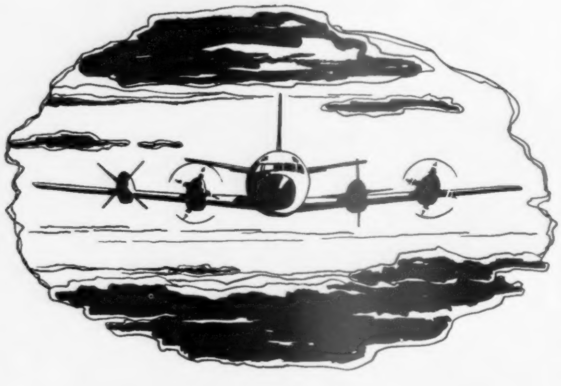
The HAC took over, suspecting the copilot might be disoriented. The copilot released the controls and began calling out airspeed and altitude. Airspeed was zero. The HAC became hypnotized by the airspeed indicator (pegged on zero) and turned control of the helo back to the copilot. Both pilots saw their altimeters register about 200 feet, and the copilot said he was going to pick up some airspeed.

He lowered some collective to stop their climb and eased the nose over to increase airspeed. Somehow the BAR ALT was released and neither one heard the RAWS, if it sounded, because in a matter of seconds, the helicopter flew into the water and rolled inverted.

The HAC abrogated his responsibility to monitor and supervise the safety of the flight. Neither pilot used an effective instrument scan in this demanding flight maneuver. At *the* critical time, cockpit coordination broke down and neither pilot was capable of carrying the load alone.

There are many other reasons which contributed to the accident:

- Night IMC with high, gusty winds.
- Poor internal communications.
- Improper procedures and poor planning for the dome recovery.
- Lack of pilot concern during the free-stream recovery due to little recent training or experience in night dipping.
- Inattention to power settings, attitude, and altitude.



Unless a greater emergency exists

By LTJG Jerry Coady
VP-22

WHEN the flight schedule came out for the weekend I saw we were scheduled for an operational flight on Monday. All of the training flights, oral boards, and check rides were behind me now and it was time to put to use what I had been taught. This would be my first flight as a PPC (Patrol Plane Commander).

LT Lance Anderson, the TACCO/Mission Commander, and I met briefly on Friday afternoon to discuss our upcoming mission. Our operation area was expected to be far from Homeplate, which immediately brought to mind several questions. Perhaps most predominate was "Where is our nearest divert field?" Other considerations were: What would be our prudent limit of endurance? When could we go to two-engine loiter? What will be our single-engine performance? I wanted my first flight as a PPC to be perfect and one that I would remember; so I would have to spend the weekend reviewing and planning.

Monday morning finally came and I was as excited as a kid on Christmas morning. My crew was obviously not as excited about spending 12 hours in the air as I; however, they were preparing for the flight in their usual professional manner. We confirmed at our briefing that our operating area was indeed a long way out and that our nearest divert field from on-station was some 800 nm away.

With the briefing complete and my copilot filing and getting the weather, it was time for me to take a close look at the hard log. The No. 2 engine had had chip lights on the two previous flights, but penalty runs checked good. We would keep an eye on it. Numbers 1, 2, and 3 engines had low air pressure at 16 percent off the auxiliary power unit. No sweat, we would just start No. 4 first.

The crew brief was completed and we had 10 minutes to make our scheduled takeoff time. An attempt to start No. 4 resulted in low air pressure at 16 percent so a huffer was ordered. The takeoff was 23 minutes late, but not bad considering.

Transit to our operating area and inflight equipment checks were uneventful. We arrived on station, loitered No. 1, and began our mission. Number 4 was loitered when we were light enough to have an acceptable rate of descent from our operating altitude should we lose an engine. Just as though it were a check ride, I gave a thorough briefing to the flight station crew so that there were no questions as to what we were going to do if we lost an engine.

Shortly after loitering No. 4, AE1 Mike Byrd, my flight engineer, was conducting a routine over-the-wings check and noticed fluid on the rear edge of the No. 4 prop afterbody. He came to the flight station and asked that I come and look at it. At first it was difficult to determine if the fluid was streaming onto the nacelle, then with the aid of a 100mm lens on a 35mm camera, fluid was clearly visible on the nacelle. After a brief conference with the flight engineer, I decided to make a precautionary abort to our predetermined divert field. I informed LT Anderson of the decision to abort, and he immediately began drafting the abort message.

Although No. 4 had been shut down for loiter, we completed the Emergency Shutdown Checklist for No. 4 in accordance with NATOPS, then restarted No. 1. Our best three-engine max range cruise altitude computed to be FL180, so we began an immediate VFR climb to 17,500 and began attempting to obtain an IFR clearance to our divert field. While awaiting clearance, the chip light on No. 2 began flickering.

"The engine should be shut down unless a greater emergency exists," but which was the greater emergency? Number 2 had a history of chip lights; was it really coming apart? The leak on No. 4; was it really a prop leak or had the seal just gotten cold and contracted, allowing some seepage? Following a brief discussion with the flight engineer, we both agreed that No. 2 was probably our worst engine, considering its past history, and that we really did

not know about No. 4. It would be dark soon, so I decided to restart No. 4 while it was still daylight and closely monitor the leak. Since the leak was static and appeared to be about the same, we had hopes that when the engine was started, the seals would warm and expand and the leak would stop.

Number 4 was restarted, then No. 2 was shut down. Now the leak on No. 4 prop was coming from the forward as well as the rear edge of the afterbody and increased in flow with the fluid clearly streaming back onto the nacelle. Without any delay, No. 4 was secured. Now with both engines shut down and only one operating generator, the aircraft was slowed to below 255 knots and the APU was started to share the electrical load and supply backup electrical power. Our inflight technician and sensor operators began securing nonessential equipment and pulling their respective circuit breakers. We declared an emergency and began an immediate VFR descent. We requested 12,000, which computed to be our best two-engine max range cruise altitude, but were assigned 14,000. We could not maintain max range airspeed at that altitude and again requested 12,000 and this time received it.

" . . . unless a greater emergency exists . . ." But what was the greater emergency? The possibility existed to get a prop pump light and overspeed on No. 4 if it was started again; therefore, I decided that it was our least reliable engine. We had more than enough fuel to make it at two-engine max range cruise, so I decided to save whatever time was left on No. 2 for possible use during the approach. Which was the greater emergency, a two-engine night landing

The crew, standing left to right, AWC J. P. Newton, SS1, AX2 D. M. Grehawick, IFT, AT3 R. T. Kirby, COMM, AO1 C. W. Granot, ORD, AE1 M. J. Byrd, FE, AW2 L. D. Wilson, SS2, and AWAN P. J. Rigali, SS3. Kneeling, left to right, LT L. O. Anderson, PPTC/MC, LTJG H. G. Holt, PPTN, LTJG R. D. Tuck, PP3P, LTJG F. R. Carlson, PP2P, and LTJG J. J. Coady, PPC.

or restarting No. 2 for the approach and landing? After some serious thought and discussion with my flight station crew, I decided that the two-engine night landing, while somewhat heavy, would be a greater emergency than restarting No. 2 for the approach and landing.

As we transited the 800 miles on two engines, my flight station crew and I discussed the possibilities and effects of encountering icing, load monitoring, and particularly losing another engine. Should we lose another engine, we would relight No. 2. Although we had faith that the APU would take the load if we lost No. 3, all of the flight station crew had flashlights readily available.

Approximately an hour-and-a-half out, I went to review my charts and approach plates for the divert field only to find that they were not on the aircraft. I probably could have just continued inbound and never told anyone; however, an old saying from flight training kept going through my mind, "Climb, Confess, Communicate." We were as high as we could climb and were already communicating, so the only thing left was to confess about the missing charts. Should we lose all communications then, they would know that we did not have the area charts and approach plates. Luckily we did have the IFR Supplement, and my copilot, LTJG Fred Carlson, made good use of it, picking out VOR/TACAN frequencies for the area and the GCA minimums.

Approximately 10 minutes prior to landing we restarted No. 2 for the approach and landing. When it was at 100 percent, the generator off light remained illuminated. The reset procedures were initiated, however, it wouldn't reset and the generator switch was turned off. I knew that in accordance with NATOPS we were supposed to shut the engine down unless a greater emergency existed. Again, I had to decide what was the greater emergency. The generator off light was not accompanied by a generator mechanical failure light, so once again I determined a two-engine night landing to be the greater emergency. I discussed my decision briefly with both my flight engineer and copilot and completely briefed them on the approach and landing. If the generator mechanical failure light should come on prior to final, we would secure No. 2; however, if it came on any time after established on final, we would continue on three engines.

I was given the option of either a visual or GCA, and although the weather was good, I opted for the GCA. Following an otherwise uneventful three-engine landing, No. 2 was secured after clearing the duty runway.

My first flight as a PPC had not been the perfect flight I hoped for, but definitely was one that I will never forget.

Planning, knowledge of procedures, crew coordination, and a decisive pilot in command combined to control events and successfully conclude the emergency. – Ed.

THE BIRTHDAY BLUES

By LCDR Church, VAQ-133

EVER notice how you can generally pinpoint that an aircrewman has a birthday within the month? He is the one running around with a NATOPS manual under his arm, a copy of FLIP General Planning nearby, and frequently is on a crash diet. It is the Birthday Blues, and it means annual NATOPS requalification, instrument rating renewal, and flight physical.

These three items have one thing in common. They are generally left on the back burner for 11 months of each year. As the birthday approaches, one suddenly wonders where did the year go? I just turned in my NATOPS open book last month, didn't I? A step on the scales shows extra pounds on the body, pushing you over the maximum for your height. Finally, a look in the logbook shows you have only three nonprecision approaches for the entire year, and worse yet, you can't remember when the last one was, and you are hazy on the procedures for an NDB approach.

Sound familiar? Lucky is the squadron with a red hot NATOPS officer, Logs and Records officer, and Flight Surgeon who monitor these items through the year and keep after everyone to stay up to speed as each month passes. But is it their job to have to needle, direct, cajole, or threaten aircrews to stay on top of their minimum requirements? Decidedly not! Their job is to monitor and keep everyone up to date on the requirements. It is the individuals' responsibility to ensure minimums are met. We all know what is required.

Each should review his logbook. (Is each monthly page signed?) He must maintain physical fitness through an established program and thoroughly review NATOPS and instrument procedures.

It is an area that should not cause problems, but invariably does. It is too easy to say, "I'll get my night flying minimums next month," or "I'll start jogging tomorrow," or "I know that CV-3 approach frontwards and backwards." Before you know it, only 3 weeks are left until the end of your birth month and your squadron is on a standdown. It becomes a panic to meet the requirements, resulting in a less than satisfactory level of readiness.

We are professionals in a demanding environment. It is our responsibility to stay proficient in all areas. The NATOPS officer, Logs and Records officer, and Flight Surgeon are not our mothers. Start today on your new habit of maximum readiness. Don't wait until you're a year older.

Re: A Naval Aviator talks about Air Force Operations, April 1977

Smyrna, GA – The article in the APR '77 issue of APPROACH where the writer interviewed the Navy and Air Force exchange pilots reminded me of the different approaches to mission requirements versus safety practiced by the two services and the commands within these services. In addition to being a former Air Force pilot and civilian flight instructor, I feel that you could add various segments of the civilian community to this article.

After 27 years of military and civilian flying, I believe that mission requirements and safety are regarded as divergent factors. That is, if you want the mission to go, you have to fly the airplane no matter what the conditions may be! And if one of those conditions could lead to unsafe or potentially unsafe practices – so be it. I don't agree with that approach. However, if you want a safe operation, you may cancel a lot of risky situations out of the picture. Particularly if you don't fly "downy" looking aircraft, launch in real bad weather situations, or "force" the non-ready/reluctant aviator into the depths of the unknown when he "doesn't feel quite right." And this seems to me to be the universal way of thinking in the aviation community these days, be it in the service, airlines, or general aviation.

I believe it's a myth! Trading safety for mission requirements is a terrible waste of men, money, and machines. This is true not only in the civilian but military flying as well, peacetime or wartime. I recall a mission in World War II when an entire squadron of P-47 *Thunderbolts* was lost when they tried to penetrate a line of severe thunderstorms en route to a target of opportunity. This may be an overdramatic example of pressing on with the mission and "to hell with safety," but I cannot be convinced it does not apply to everyday operations. This applies to all phases of safety, be it a major or minor deviation from accepted safety.

Problems arise from goals established by management, particularly when they say the *mission* is paramount, not *safety*. When this theory (*implied or actual*) is decreed, lower levels of management often believe that the former is the more important achievement. They separate the mission and safety as being two elements when in fact they are one, or should be anyway. Organizations that have outstanding safety records have successfully communicated that the two are one.

There is absolutely no justification for damage to or loss of an aircraft, or an injury or death of a crewmember caused by a mission which has been attempted where some safety standard was ignored or compromised. This applies to peacetime or wartime environments. There may be commanders who can furnish me reasons why this may not be the case in times of war, but I cannot imagine what those would be. In WWII, there were many squadrons who were "forced" to fly non-full-systems aircraft to complete the mission. I must say that in this time in history everyone was short of not only aircraft but every other commodity that was needed to fight, be it beans or bullets! When faced with an enemy that had everything, the "make best with what you have" principle was practiced quite frequently.

In the above article, LCDR Sewall said, "They [*Air Force*] can and do leave junior pilots at the end of the runway if the weather falls below the minimum established for their experience level. We [*Navy*] can't leave a pilot on the catapult if the weather goes below his minimums. We cannot afford to lock the deck because one pilot is less experienced than another." I ask, "Why to hell not? What mission is so important that you would jeopardize a *nugget* and his expensive airplane just so the mission could go?"

I'm not being critical of LCDR Sewall's comments – but the Navy managers above him. *They* are the ones that set the standards, and *they* have evidently convinced him that what he said is what the Navy expects the *nugget* to do. I am of the opposite opinion. The mission is not that important that it could not be delayed long enough to get the *nugget* off the cat. It may be difficult to get a more experienced pilot to take his place, but why send the inexperienced off to do a job that should require the more experienced? I understand that it's difficult to stop or hold up carrier ops once they've begun, but surely there must be a limit to everything. It takes too much time, money, and effort to train a crewmember and to build an aircraft to waste either one just so the mission can go. It would be hard to justify the loss of man and machine for "mission-accomplished" sake.

The most successful fighting units are those who conserve their total resources. We do not see this clearly until we are faced with overwhelming odds and have no replacements for the men and machines that are lost. It then becomes paramount that we not lose a man or machine except as the direct result of enemy action. If we are faced with a wartime situation in the future where we regard mission and safety as one – let's get real good at it and practice it as such during peacetime!

I have never really liked the word – *safety*. It always has sounded like something that you did as an afterthought. In my career in civilian and military air ops, I always had the goal to recover all men and machines in good condition, never mind what others may call it. And I never sent them out unless I was sure they would come back in good shape. My concept of safety is the ability to conduct a mission without hurting anyone and without damaging any of the equipment. It has worked for me for 27 years, very successfully – and for some, much longer than that.

Robert T. Smith
Boy Aviator

Letters

Hazardous Cargo — Again

FPO, NY – I was reading a recent Air Break on hazardous cargo where a helo was being ferried in a transport and after becoming airborne the helo began leaking fuel. It was *thought* that the helo was RFF (ready for ferry) and that all safety precautions were adhered to. I *thought* this was an improbability with all the publications in existence to prevent such occurrences. Not only did it happen to our sister service as in the referred-to Air Break, but it happened again. This time to us.

I was on a C-2 flight as a crewmember from NAF MedSea to USS BOAT with a replacement jet engine for the ASW community. The engine was *assumed* to be RFF, as the RFI (ready-for-issue) tags were visibly attached. No further checks were made. Shortly after takeoff, while in cruise flight, the replacement engine began leaking fluid onto the cargo deck of the COD. An emergency was declared, and the return flight and landing at NAF were without further incident.

The fluid was determined to be a mixture of JP and preservative oil from a "capped-off" line from the engine. The engine was *prepared* for shipment at a CONUS NARF and futher *checked* by the NAF AIMD and once again by the loadmaster(?). It was obvious to me (after-the-fact) that someone (several) did not follow established procedures.

I thought the author of the helo/transport case had a good closing sentence citing a Marine Corps Order on safety precautions. It may be of interest that other orders on how to prepare cargo are NAVAIR 15-02-500 and NAVSUP 505, to name a few.

Name Withheld

Quit Pickin' on the Pilots All the Time!

MCAS – Many of us, pilots and ASOs alike, out in the Fleet agree that the majority of the mishaps are caused by pilot error. And justifiably so, many are worthy of feature articles in APPROACH. We see ourselves in Air Breaks, Delta Sierras, and Anymouses quite frequently. Hopefully, we aviators and aircrew alike, will and do learn (believe it or not) from other's unfortunate mistakes. And not to be completely negative, we do appreciate seeing the good side via the Sierra Hotel and Bravo Zulu awards. *Positive strokes* really help the morale for sure, particularly in what appears to be a *negative stroke* world of today.

Like one of your many avid readers, I am concerned about the constant blame that's put on (even though it may be appropriate and subsequent stories written about) the Delta Sierra pilot or aircrew. There have been several times that I recall when *supervisory* error was the primary cause factor in an accident. Yet there seldom appears a feature article on this factor. What's the chance of an article or two on supervisory error rather than *pilot*-factor-caused accidents? Maybe this will shed a different "approach" on aircraft accident prevention and safety. At least the direct rays of blame won't always be in the eyes of the aircrewmember.

I, for one, am drafting such an article and hope that it merits publication in a future edition. Maybe other pilots will follow suit.

• We have in the past written articles concerning aircrew surveillance as one aspect of supervisor responsibility. We will continue to place heavy emphasis on this area. However, as always, we welcome Fleet inputs on those subject areas which the Fleet feels should be addressed in APPROACH.

Wear It Right

FPO, San Francisco – I read APPROACH every month and feel that it is an outstanding magazine. I find that it is easy to read and contains some excellent material in the area of safety. We always learn by the mistakes of others, and seeing it in print really brings the point home. I do have a small criticism concerning the Bravo Zulu section. As the squadron safety officer, I am continually reminding flightcrews about the way they wear their flight gear. Specifically, sleeves rolled up, zippers down, and articles sticking out of pockets. I notice many times that you print an article in which the guy has performed in an outstanding manner, then show a photo with the sleeves rolled up and zippers down to the waistline. It kinda negates the entire effort.

• Thanks for your comments. Of course, most of the photos are posed; however, we do share your concern over the discrepancies. ASOs take note and give us a hand.

Clear the Windshield

Southern CA – We were flying our helicopter at 800 feet a mile off the coast on a training flight. One minute we were in the clear, enjoying the scenery; the next minute the sky around us was full of birds. We broke right to avoid the flocking group; however, two large gulls wheeled into us. They split the windshield dead center. One passed to port, but the other one became impaled on the starboard windshield wiper

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

arm. My copilot, in the right seat, disengaged his shoulder straps momentarily just long enough to reach out the window, grab the gull's legs, and prevent it from dislodging and being sucked into the engine intake. We landed on an emergency pad just 2 miles away and inspected our birds. The one which won't fly again we threw away; the one we were in became airborne and we returned to base.

LT Harry Gaard
SAR Pilot

Mirror, Mirror on the Wall . . .

FPO, NY – Here we go again. After reviewing several recent aircraft accident reports, I envision a scene something like this:

• *TYCOM to Functional Wing CDR* – I view with concern . . .

• *Functional Wing CDR to Squadron COs* – Too many needless accidents. Let's get back in the saddle. I want a meaningful standdown.

• *Squadron CO to Safety Officer* – Let's push the NATOPS program. How about some more quizzes? Add on another WST to the monthly schedule. Let's look at our whole Safety/NATOPS program. Let's . . .

• *Safety Officer* – Yes, skipper, let's look at the whole program.

Most of us who have been flying these wonderful machines very long are familiar with the above script. However, I would submit, though, that maybe we have not really looked at the whole program. Yes, standdowns, quizzes, WST, checkflights, etc., are all beneficial, to a point. However, how often have you looked at yourself, skipper?

When I read where a below average aviator, with known drinking problems, personal problems at home, and under stress at work flies into the water, taking his life and that of another crewmember, I wonder what you see, skipper?

When I see where an aviator with minimum time in type inadvertently stalls his machine, loses the bubble (and his aircraft), and his skipper isn't aware of what's happening, I wonder if anyone is minding the store?

When I see where the squadron *safety officer*, an experienced aviator in type, lets the pilot of the aircraft he is riding fly into the water *and never say a word*, I wonder . . .

The list could go on. I know you have problems, skipper. CAG is on your back. You just got another ADTAKE from the staff back home. You're undermanned, and your wife hasn't written. You're also a nice guy. I think I know what you're thinking.

• "Sure, ole Jim has a few too many, too often. But hell fire, man, he is a combat-experienced aviator. Besides, I close the club down once in a while too. If I ground Jim, it would ruin him and his career."

• "Yep, that's my best pilot. Yeah, I know he shut both engines down in the break, but if the emergency restart gear had worked . . ."

• "Boy, am I glad I got a bunch of tigers. They really know how to ring the feathers out of the old bird. When we lead those attack weenies into the target and the missiles start flying and the MIGs come out and . . ."

Maybe it's time to take a closer look at yourself, skipper, before somebody else does.

Former ASO/CO/CAG

The NFO Copilot

FPO, San Francisco – The Naval Flight Officer frequently finds himself placed in an aircraft where the functions of copilot are required of him. He must not only operate a complex weapons system but must also possess a knowledge of aircraft flight systems and instrument flight procedures to assist the pilot during all phases of flight.

How does the NFO obtain the necessary skills and knowledge to adequately function as a copilot in today's highly complex naval aircraft operating in instrument flight conditions? Flight training received in the Training Command is necessarily general in nature so as to prepare numbers of Naval Flight Officers for the many different aircraft and missions flown. The Replacement Training Squadron for a particular aircraft places the primary emphasis on imparting a sound understanding of the aircraft, weapons system, and how to use them.

It is the Naval Flight Officer's first tactical squadron in which his specific responsibilities as a functional copilot must be defined and developed. Through detailed briefing, inflight application of procedures, and thorough postflight debriefings, the NFO and his pilot will be able to function together and determine those areas in which they as a team are strong and those areas in which more attention will have to be paid to fully develop a professional and effective crew team.

Periodic checks of crew coordination and compliance with standard operational procedures should be conducted on a random basis of all assigned aircrews. The squadron training officer would be in the best position to conduct these crew standardization checks and be able to tailor aircrew training to reenforce any weak areas noted among aircrews.

LCDR Hawk
VAQ-133

Case of the Missing Fingers (Nonfiction)

NAS NOLA – Many times this type of accident has occurred, yet many aircrewmen and maintenance personnel continue to disregard or overlook the simplest safety precautions. The wearing of rings (or other jewelry) around aircraft (or other machinery) is inherently dangerous! Safety briefings are given on this matter time and time again. Still they seem to go on unheeded occasionally. Case-in-point in one of our reserve squadrons of recent date.

• *Personal Injury* – Traumatic amputation of third (ring) finger.

• *Cause* – While boarding aircraft via boarding ladder step, maintenanceman slipped, grabbed canopy rail, caught ring finger in canopy sill, resulting in amputation of finger.

• *CO's Comment* – "Maintenanceman *was* aware of the inherent dangers of wearing jewelry around aircraft but ignored safety precautions for unknown reasons."

Although Old Hands seem to know about the hazards of wearing jewelry around machinery, do your units' supervisory personnel continuously *reiterate* the safe practice approach to New Hands? Don't assume that they already know, particularly in these days of high turnover rates or where personnel drill only 2 days a month. So once again, "Communicate – Don't Amputate!"

Safety CPO
NARU

• Even some *Old Hands* forget. Soon after we received the above letter, the local newspaper revealed that one of our most famous astronauts lost his ring finger when jumping from a truck. Fortunately, the finger was surgically reattached. It can happen to anyone.

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approach

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CREDITS/Our cover this month by staff artist Blake Rader depicts an early scene of a Boeing F3B-1 lifting off from the USS LANGLEY (CV 1). IFC painting by R. G. Smith, courtesy McDonnell-Douglas Aircraft Co.

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Drive like lightning
and sooner or later you will hit a tree.

Ace L.


A flight deck is no place to be
while on medication.